



STUDENTS' ACHIEVEMENTS IN DIFFERENT COMPONENTS OF MATHEMATICS AFTER COMPLETING ELEMENTARY EDUCATION

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ABSTRACT

Students' achievement in mathematics plays a crucial role in all round development of a child and is often associated with the future economic power and competitiveness of a country. Also RTE, 2009 enables every child to access quality mathematics education at elementary level. In this context, an attempt has been made in the present article to look at the progress made with regard to different components of mathematics of the students who have completed elementary education and whether there is a gender gap in that achievement. A Survey method was adopted to collect data from 400 students of 19 schools of South 24 Parganas, West Bengal by random sampling technique. A self made standardized achievement test in mathematics was treated as a tool. The result highlighted that students showed their best performance in the two components namely statistical representation and construction. In unitary method, weighed mean and percentage component they performed at disqualified level. It also revealed that while boys have done a little better achievement in most of the components than girls students, girls also outperformed boys in few components namely perimeter and area of plane figures, fundamental geometrical concept and geometrical transformation.

KEYWORDS: Mathematics, Achievement in mathematics, Elementary Education, Comparison among Boys and Girls students.

1 Introduction

Competition seems to be a central focus in our society today. No matter where one goes or what one does, one's age or occupation, there seems to be an emphasis on competition. The world of education is no exception. There is competition at every level and in every phase of education today from high school students competing to get into the best colleges, to teachers competing for merit pay, and to schools competing on standardized achievement tests. Pressure on educators to compete comes from many levels. Pressure on educators to compete can also come from parents, colleagues, and administrators, as well as from various local, state, and federal institutions. The overwhelming message to teachers throughout the country is to "get the scores up." In addition, there is pressure on educators to establish a good reputation for their schools within the community. At interschool athletic events, in grocery stores, and wherever parents meet, they discuss and compare schools: which has more computers, which has the best programs, and most of all, which schools rank highest on the standardized achievement tests.

The rationale for choosing mathematical achievement in different components has four dimensions. Firstly, for the foreseeable future, mathematics has a key role to play in helping reduce inequalities. Without achieving a basic mathematics education, people are unable to participate fully as citizens. The second dimension is that basic school mathematics introduces students to one of the great achievements of the modern world. It also makes a particular contribution to developing powerful ways of thinking within mathematics and, more importantly, beyond mathematics. Students begin to acquire a valued and valuable part of culture. Thirdly, in the world of work, basic school mathematics increases the freedoms to choose a wider range of careers, careers that are more financially and personally enriching. The fourth dimension is increasing globalization. This brings with it challenges, potentials and possibilities; to better meet these, students need at least a basic mathematics education.

2 Materials and Methods

2.1 Objectives

This paper aims to

- Find the students achievement at the end of elementary education in the district South 24 Parganas, West Bengal, in different components of mathematics prescribed in the contents upto class VIII.
- Compare the achievement in different components of mathematics among boys and girls students.

2.2 Methodology

Stratified random techniques were adopted for the study. 400 students were taken from nineteen government aided/sponsored schools of South 24 Parganas. Out of these 210 students were boys and 190 were girl.

An Achievement test in mathematics for class VIII was made and standardized. The researcher has gone through the syllabus of Mathematics upto class VIII of prescribed books of West Bengal Board of Secondary Education (WBBSE), Central Board Secondary Education (C.B.S.E) and Indian Council of Secondary Education (I.C.S.E.). After analyzing the content the researcher has broken the whole content into fourteen components viz.

Table 1: Classification of Components in Mathematics

Component 1	Number
Component 2	Ratio and Proportion
Component 3	Unitary method, Percentage
Component 4	Time and distance
Component 5	Perimeter and area of Plane figure
Component 6	Variable, Algebraic Expressions
Component 7	Identities and factorization of algebraic expressions
Component 8	Linear Equation
Component 9	Fundamental geometrical concept
Component 10	Axioms on straight lines , triangles , polygons etc.
Component 11	Similarity and congruence
Component 12	Construction
Component 13	Geometrical transformation
Component 14	Statistical representation

3 Result

The answer of students in the achievement test was divided into four categories- No response, Wrong response, Partially Correct response and Correct Response. Then the analysis was done.

Table 2: Component wise response of the students

Components	Percentage of No response	Percentage of Wrong response	Percentage of Partially Correct response	Percentage of Correct Response
Number System	16.2	40.47	0.19	43.11
Ratio and Proportion	7	53.75	0	39.25
Unitary Method, Weighted Mean, Percentage	30.42	39.83	6.08	23.25
Time and Distance	6	49.75	3.87	40.38
Perimeter, area of Plain figures	2.62	46.25	0	62.38
Algebraic Expressions	3.16	44.67	0	52.17
Formulae and Factorization	2.83	58.5	0	43.6
Linear Equations and its application	1.37	49.75	0	48.88
Fundamental Geometrical Concept	6.83	38.92	0	54.25
Axioms on straight lines, angles, triangles, etc	15.39	40.11	0	44.5
Geometrical Transformation	18.75	10.13	5.12	65.75

Similarity and Congruence	3	34.75	0	62.25
Construction	3.5	12.75	0.75	83
Statistical Representation	1.25	4.75	0	94

Table 3: Componentwise Achievement of Girls

Components	Number of No response	Number of Wrong response	Number of Partially Correct response	Number of Correct Response
1.Number	17.95	46.37	0.23	35.15
2.Ratio and Proportion	6.32	58.42		35.26
3.Unitary Method, Weighted Mean, Percentage	33.3	45.43	5.44	15.78
4.Time and Distance	7.36	54.73	7.36	30.52
5.Perimeter, area of Plain figures	3.42	31.84		64.73
6.Algebraic Expressions	2.63	46.6		50.7
7.Formulae and Factorization	3.15	56.6		40.17
8.Linear Equations and its application	1.05	53.95		45
9.Fundamental Geometrical Concept	5.79	37.89		56.32
10.Axioms on straight lines, angles, triangles, etc.	17.52	40.6		41.88
11.Similarity and Congruence	3.68	40		56.31
12.Construction	2.63	17.37	0.52	76.47
13.Geometrical Transformation	23.68	6.84	3.42	66.05
14.Statistical Representation	1.57	4.21		92.63

Table 4: Componentwise Achievement of Boys

Components	Number of No response	Number of Wrong response	Number of Partially Correct response	Number of Correct Response
1.Number	14.23	35.13	0.15	50.05
2.Ratio and Proportion	7.62	49.52		42.86
3.Unitary Method, Weighted Mean, Percentage	27.7	34.76	6.6	30
4.Time and Distance	4.76	45.23	0.71	49.29
5.Perimeter, area of Plain figures	1.9	37.85		59.52
6.Algebraic Expressions	3.65	42.85		53.49
7.Formulae and Factorization	2.54	50.63		46.83
8.Linear Equations and its application	1.66	45.95		52.38
9.Fundamental Geometrical Concept	7.77	39.84		52.38
10.Axioms on straight lines, angles, triangles, etc.	13.46	39.65		46.87
11.Similarity and Congruence	2.38	30		67.61
12.Construction	4.28	8.57	0.95	86.19
13.Geometrical Transformation	14.28	13.09	6.66	65.95
14.Statistical Representation	0.95	5.23		93.81

4 Discussion

The Quality of Education is at present, in the focus in all programmes relating to elementary education in general and primary education in particular. Elementary Education means the education from first class to eighth class. The Right of Children to Free and Compulsory Education (RTE) Act, 2009, became operative on 1 April 2010. It guarantees 8 years of elementary education to every child in the age group 6-14 in an age appropriate classroom in the vicinity of his/her neighbourhood. This implies the right of every Indian child to quality mathematics education as well.

Why are Indian girls discriminated against with respect to basic education? The PROBE (Public Report on Basic Education in India) survey revealed that while the gap in educational aspirations between social groups is narrowing rapidly,

these common aspirations give very unequal attention to boys and girls. Most parents (mothers as well as fathers) expressed much stronger interest in their sons' education than in that of their daughters. (Kumar & Rustagi, 2010)

In that report "Assessing the Impact of Right to Education Act", done by Klynveld Peat Marwick Goerdeler (KPMG) with collaboration of CII (Confederation of Indian Industry) in March 2016 it is mentioned that about 19.5% of all the studied children in class two were not able to recognize number upto nine, close to 74% of all the studied children in class three could not do two digit subtraction and close to 74% of all the studied children in class five were not able to do division. (KPMG & CII, 2016)

For different category of response, it was observed that 48.39 % students gave correct response, 11.60 % students didn't response, 1 % students had given partially and rest of the students gave wrong response. It can be said response of boys students were in a little better position than the response of total students. It could be stated that boys students had given, 36.45 % wrong response, 51.48 % correct response .10.70 % of students couldn't gave any answer. Almost 6% differences was observed in correct response among boys and girls students. From the above three tables 1,2 and 3 students performance in different components can easily be understood. Overall performance of both boys and girls move in a similar path. Both were doing well in Statistical Representation and Construction components. More than 75% students gave correct response in those items. 50% - 60% correct response were given by the boys students in five components viz. Number; Perimeter, Area of Plane figures; Algebraic Expressions; Linear Equations and its application and Fundamental Geometrical Concept. In that range girls students performed in the four components -Perimeter, area of Plain figures; Algebraic Expressions; Fundamental Geometrical Concept and Similarity and Congruence. In most of the components boys were doing better than girls. Girls showed their performance better than boys in the three component perimeter, area of plane figures, fundamental geometrical concept and geometric transformation. The lowest achievement was in the component unitary method, weighted mean and percentage, only 23.25 % response was correct.

5 Conclusion

To sum – up, it may be concluded with that in arithmetic section mainly in the component unitary method, weighed mean and percentage the achievement of the students were very low. Again they have done very good in statistical representation component. There is a little difference in the achievement in different components among boys and girls students. The variation among students' achievements in different components of mathematics is due to the disparity in the amount of understanding of the concepts. The perception of interrelationship of different components of mathematics among students is very important. To get rid of the weaknesses the following points should be kept in mind:

- From the point of view of the rights of the students, the issues of availability, accessibility, acceptability and adaptability are essential. Without these, there can be no quality education. The consequences of a mathematics education in the long-term – to be able to participate in the variety of human activities and meet the challenges to society emphasize the importance of education.
- A lot need to be done to fill this gender gap in mathematics achievement. Male and female students should make the competitive environment, coordinate and exchange their knowledge from one another in mathematics teaching and learning. Girls students should be informed the importance of mathematics and it is the basic tool for further education.
- Mathematics teaching and evaluation strategies should be bias-free. This way, males and females will tend to see themselves as equals, capable of competing and collaborating in classroom activities.

The findings of the paper will help directly to the educationist, education planner, administrator in their work.

The Head teachers and the teachers, the guardians, the school inspectors could get the present status of students' achievement in mathematics.

Also the paper opens up many dimensions for future studies in the field of teaching learning of mathematics education.

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